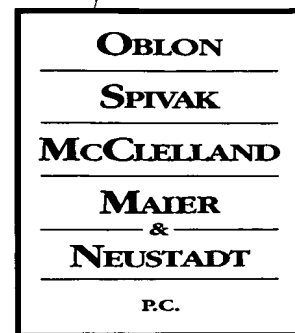




COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

Docket No.: 213954US2



ATTORNEYS AT LAW

RE: Application Serial No.: 09/961,255  
Inventor: Bernard DIENY  
RCE Filed: December 11, 2003  
For: SPIN VALVE DEVICE WITH SPIN-DEPENDENT, SPECULAR ELECTRONIC  
REFLECTION  
Group: 1773  
Examiner: UHLIR, Nikolas J.

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JUL 02 2004

TC 1700

SIR:

Attached hereto for filing are the following papers:

REQUEST FOR WITHDRAWAL OF ABANDONMENT  
COPY OF NOTICE OF ABANDONMENT DATED MAY 4, 2004  
COPY OF DATE-STAMPED FILING RECEIPT DATED DECEMBER 11, 2003  
COPY OF REQUEST FOR CONTINUED EXAMINATION (RCE) TRANSMITTAL  
COPY OF REQUEST FOR EXTENSION OF TIME (2 MONTHS)  
COPY OF CANCELED CHECK NO. 300658 IN THE AMOUNT OF \$1,190.00  
COPY OF DATE-STAMPED FILING RECEIPT DATED OCTOBER 14, 2003  
COPY OF AMENDMENT TRANSMITTAL AND AMENDMENT

Our check in the amount of \$0.00 is attached covering any required fees. In the event any variance exists between the amount enclosed and the Patent Office charges for filing the above-noted documents, including any fees required under 37 CFR 1.136 for any necessary Extension of Time to make the filing of the attached documents timely, please charge or credit the difference to our Deposit Account No. 15-0030. Further, if these papers are not considered timely filed, then a petition is hereby made under 37 CFR 1.136 for the necessary extension of time.

Respectfully Submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.

  
Gregory J. Maier  
Registration No. 25,599

Customer Number

**22850**

Tel. (703) 413-3000  
Fax. (703) 413-2220  
(OSMMN 05/04)

**Robert T. Pous**  
Registration No. 29,099

I:\USER\MAIDO\PETWDABAND\213954PETWDABANDCVR.DOC

213954US2



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF:

:

Bernard DIENY

: EXAMINER: UHLIR, Nikolas J.

SERIAL NO: 09/961,255

: GROUP ART UNIT: 1773

RCE FILED: December 11, 2003

:

**RECEIVED**

**JUL 02 2004**

TITLE: SPIN VALVE DEVICE WITH  
SPIN-DEPENDENT, SPECULAR  
ELECTRONIC REFLECTION

**TC 1700**

**REQUEST FOR WITHDRAWAL OF HOLDING OF ABANDONMENT**

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

Sir:

Responsive to the Notice of Abandonment dated May 4, 2004, Applicant herewith requests withdrawal of said abandonment for the following reasons. A Request for Continued Examination was filed on December 11, 2003, along with a two month Request for Extension of Time. Upon the Examiner's request, copies of the Request for Continued Examination, Request for Extension of Time, the Amendment filed October 14, 2003 and two date-stamped filing receipts were faxed to the Examiner on April 19, 2004. Signatures on the faxed copies of the documents listed above were inadvertently omitted. Enclosed herewith are copies of the date-stamped filing receipt and the cancelled check# 300658 for \$1,190.00 evidencing filing and payment of Governmental fees for the Request for Continued Examination and the two Month Extension of Time.

Application No: 09/961,255  
Reply to Notice of Abandonment of May 4, 2004

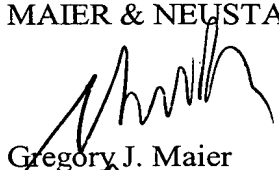
In order to expedite prosecution, Applicant's Attorney is submitting a signed copy of the Request for Continued Examination and a copy of the Request for Extension of Time filed on December 11, 2003. Applicant's Attorney also encloses a signed copy of Applicant's Amendment filed October 14, 2003 and a copy of the date-stamped Filing Receipt for Examiner's convenience.

It is believed that the above discussion and documents enclosed herewith clearly prove that the request for continued examination was subsequently signed and filed and therefore, the holding of abandonment was issued in error.

Accordingly, it is requested the holding of abandonment be withdrawn and that prosecution be allowed to continue in the present application.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.



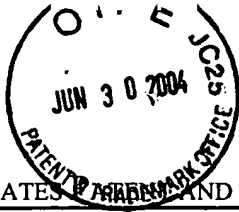
Gregory J. Maier  
Registration No. 25,599

Customer Number  
**22850**

**Robert T. Pous**  
**Registration No. 29,099**

Tel. (703) 413-3000  
Fax. (703) 413-2220  
(OSMMN 05/03)

GJM/md  
I:\USER\MAIDO\PETWDABAND\213954PETWDABAND.DOC



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/961,255	09/25/2001	Bernard Dieny	213954US2	8064

22850 7590 05/04/2004

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.  
1940 DUKE STREET  
ALEXANDRIA, VA 22314

EXAMINER

UHLIR, NIKOLAS J

ART UNIT PAPER NUMBER

1773

DATE MAILED: 05/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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JUL 02 2004

TC 1700

RECEIVED: 5-6-04  
OBLON, SPIVAK, McCLELLAND  
MAIER & NEUSTADT, P.C.

DOCKETING DEPT.

Initials/Date Docketed: cnx 5-6-04  
Type of Resp(s): Pet to WPA Band  
Due Date(s): 7-4-04



# Notice of Abandonment

Application No.

09/961,255

Examiner

Nikolas J. Uhler

Applicant(s)

DIENY, BERNARD

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

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JUL 02 2004

TC 1700

This application is abandoned in view of:

1. ☒ Applicant's failure to timely file a proper reply to the Office letter mailed on 13 November 2003.
  - (a) ☐ A reply was received on \_\_\_\_\_ (with a Certificate of Mailing or Transmission dated \_\_\_\_\_), which is after the expiration of the period for reply (including a total extension of time of \_\_\_\_\_ month(s)) which expired on \_\_\_\_\_.
  - (b) ☒ A proposed reply was received on 19 April 2003, but it does not constitute a proper reply under 37 CFR 1.113 (a) to the final rejection.

(A proper reply under 37 CFR 1.113 to a final rejection consists only of: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114).
  - (c) ☐ A reply was received on \_\_\_\_\_ but it does not constitute a proper reply, or a bona fide attempt at a proper reply, to the non-final rejection. See 37 CFR 1.85(a) and 1.111. (See explanation in box 7 below).
  - (d) ☐ No reply has been received.
2. ☐ Applicant's failure to timely pay the required issue fee and publication fee, if applicable, within the statutory period of three months from the mailing date of the Notice of Allowance (PTOL-85).
  - (a) ☐ The issue fee and publication fee, if applicable, was received on \_\_\_\_\_ (with a Certificate of Mailing or Transmission dated \_\_\_\_\_), which is after the expiration of the statutory period for payment of the issue fee (and publication fee) set in the Notice of Allowance (PTOL-85).
  - (b) ☐ The submitted fee of \$\_\_\_\_\_ is insufficient. A balance of \$\_\_\_\_\_ is due.

The issue fee required by 37 CFR 1.18 is \$\_\_\_\_\_. The publication fee, if required by 37 CFR 1.18(d), is \$\_\_\_\_\_.
  - (c) ☐ The issue fee and publication fee, if applicable, has not been received.
3. ☐ Applicant's failure to timely file corrected drawings as required by, and within the three-month period set in, the Notice of Allowability (PTO-37).
  - (a) ☐ Proposed corrected drawings were received on \_\_\_\_\_ (with a Certificate of Mailing or Transmission dated \_\_\_\_\_), which is after the expiration of the period for reply.
  - (b) ☐ No corrected drawings have been received.
4. ☐ The letter of express abandonment which is signed by the attorney or agent of record, the assignee of the entire interest, or all of the applicants.
5. ☐ The letter of express abandonment which is signed by an attorney or agent (acting in a representative capacity under 37 CFR 1.34(a)) upon the filing of a continuing application.
6. ☐ The decision by the Board of Patent Appeals and Interference rendered on \_\_\_\_\_ and because the period for seeking court review of the decision has expired and there are no allowed claims.
7. ☒ The reason(s) below:

A request for continued examination was received on 12/12/2003, but was not entered for unknown reasons. Upon the examiners request, a copy of the RCE with a date stamped receipt was faxed to the examiner. However, a signed copy of the RCE could not be provided. Thus, the RCE does not comply with 37 CFR 1.114.

Paul Thibodeau  
Supervisory Patent Examiner  
Technology Center 1700

Petitions to revive under 37 CFR 1.137(a) or (b), or requests to withdraw the holding of abandonment under 37 CFR 1.181, should be promptly filed to minimize any negative effects on patent term.



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OSMM&N File No. 213954US2

Dept.: E/M

By: GJM/mac

Serial No. 09/961,255

In the matter of the Application of: Bernard DIENY

For: SPIN VALVE DEVICE WITH SPIN-DEPENDENT, SPECULAR  
ELECTRONIC REFLECTION

Due Date: December 11, 2003

The following has been received in the U.S. Patent Office on the date stamped hereon:

- ☒ Check for \$1,190.00 ☐ Dep. Acct. Order Form
- ☒ Petition for Extension of Time (2 Months)
- ☒ Request for Continued Examination (RCE) Transmittal



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TC 1700

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## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF: Bernard DIENY

SERIAL NO: 09/961,255

GAU: 1773

FILED: September 25, 2001

EXAMINER: Nikolas UHLIR

FOR: SPIN VALVE DEVICE WITH SPIN-DEPENDENT, SPECULAR ELECTRONIC REFLECTION

## REQUEST FOR CONTINUED EXAMINATION (RCE) TRANSMITTAL

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

Linked to OPTMS	
12/12/03	213954US
DATE	CASE ID

SIR:

This is a request for Continued Examination (RCE) under 37 C.F.R. §1.114 of the above-identified application.

## Submission required under 37 C.F.R. §1.114

## Previously Submitted:

- ☒ Consider the amendment(s)/reply under 37 C.F.R. §1.116 previously filed on October 14, 2003
- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on

## Enclosed:

- ☐ Amendment/Reply
- ☐ Information Disclosure Statement (IDS)
- ☒ Other: Petition for Extension of Time (2 Months)

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TC 1700

FEES	RATE	CALCULATIONS
<input type="checkbox"/> Suspension of action on the above-identified application is requested under 37 C.F.R. §1.103(c) for a period of months.	\$130.00	\$0.00
<input checked="" type="checkbox"/> RCE Fee required under 37 C.F.R. §1.17(e)	\$770.00	\$770.00
<input checked="" type="checkbox"/> A TWO MONTH EXTENSION OF TIME IS REQUESTED		\$420.00
<input type="checkbox"/>		\$0.00
TOTAL OF ABOVE CALCULATIONS:		\$1,190.00
<input type="checkbox"/> REDUCTION BY 50% FOR FILING AS SMALL ENTITY		\$0.00
TOTAL:		\$1,190.00

- ☒ A check in the amount of \$1,190.00 is enclosed
- ☐ Credit card payment form is attached to cover the fees in the amount of \$0.00
- ☒ Please charge any additional Fees for the papers being filed herewith and for which no check or credit card payment is enclosed herewith, or credit any overpayment to Deposit Account No. 15-0030. A duplicate copy of this sheet is enclosed.
- ☒ If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 CFR 1.136, and any additional fees required under 37 CFR 1.136 for any necessary extension of time may be charged to Deposit Account No. 15-0030. A duplicate of this sheet is enclosed.

Respectfully Submitted,

OBLON, SHIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.

Gregory J. Maier

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Customer Number

22850

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Robert T. Pous  
Registration No. 29,099

Docket No. 213954US2



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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF: Bernard DIENY

SERIAL NO: 09/961,255

GAU: 1773

RCE FILED: Herewith

EXAMINER: Nikolas UHLIR

FOR: SPIN VALVE DEVICE WITH SPIN-DEPENDENT, SPECULAR ELECTRONIC REFLECTION

REQUEST FOR EXTENSION OF TIME  
UNDER 37 C.F.R. 1.136

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

Linked to OPTMS	
12/12/03	213954US
DATE	CASE ID

SIR:

It is hereby requested that a two month extension of time be granted to December 11, 2003 for

- ☐ filing a response to the Official Action dated:
- ☐ responding to the requirements in the Notice of Allowability dated:
- ☐ filing the Formal Drawings. The Issue Fee due has been timely filed.
- ☐ responding to the Notice to File Missing Parts of Application dated:
- ☒ filing a Request for Continued Examination. A timely response to the final rejection, due October 11, 2003 has been filed.
- ☐ filing an Appeal Brief. A Notice of Appeal was filed on:
- ☐ Applicant claims small entity status. See 37 CFR 1.27. Therefore, the fee amount shown below is reduced by one-half.

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The required fee of \$420.00 is enclosed herewith by check and any further charges may be made against the Attorney of Record's Deposit Account No. 15-0030. A duplicate copy of this sheet is enclosed.

Respectfully Submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.

Gregory J. Maier

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Customer Number

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Tel. (703) 413-3000  
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(OSMMN 05/03)

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Robert T. Pous  
Registration No. 29,099





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OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.  
1940 DUKE STREET  
ALEXANDRIA, VA 22314

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VIRGINIA  
68-141/510

300658

300658

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DATE

AMOUNT

12/9/2003

\$1,190.00

TO THE  
ORDER  
OF:

DIRECTOR OF THE U.S. PATENT & TRADEMARK OFFICE

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DOCKET 213954US

RCE, EOT (2 MONTHS)

AUTHORIZED SIGNATURE

⑈ 300658⑈ ⑆ 051001414⑆ 2065173481544⑈

⑈ 0000119000⑈

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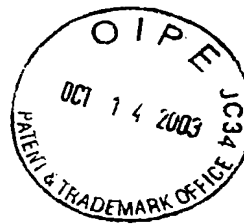
- ✓ OSMM&N File No. 213954US2 Dept.: E/M  
✓ Serial No. 09/961,255 By: GJM/DAB/des  
✓ In the matter of the Application of: Bernard DIENY  
✓ For: SPIN VALVE DEVICE WITH SPIN-DEPENDENT, SPECULAR  
ELECTRONIC REFLECTION

Due Date: October 11, 2003

The following has been received in the U.S. Patent Office on the date stamped hereon:

- Dep. Acct. Order Form
- ✓ ■ Letter (cover)
- ✓ ■ Amendment

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TC 1700



Docket No. 213954US2

IN RE APPLICATION OF: Bernard DIENY

SERIAL NO: 09/961,255

FILED: September 25, 2001

FOR: SPIN VALVE DEVICE WITH SPIN-DEPENDENT, SPECULAR ELECTRONIC REFLECTION



COPY

RESPONSE UNDER 37 C.F.R. § 1.110-  
EXPEDITED PROCEDURE EXAMINING  
GROUP 1713

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

SIR:

Transmitted herewith is an amendment in the above-identified application.

- ☒ No additional fee is required
- ☐ Small entity status of this application under 37 C.F.R. §1.9 and §1.27 is claimed.
- ☐ Additional documents filed herewith:

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TC 1700

The Fee has been calculated as shown below:

CLAIMS	CLAIMS REMAINING		HIGHEST NUMBER PREVIOUSLY PAID	NO. EXTRA CLAIMS	RATE	CALCULATIONS
TOTAL	12	MINUS	20	0	x \$18 =	\$0.00
INDEPENDENT	1	MINUS	3	0	x \$86 =	\$0.00
		<input type="checkbox"/> MULTIPLE DEPENDENT CLAIMS			+ \$290 =	\$0.00
		TOTAL OF ABOVE CALCULATIONS				\$0.00
		<input type="checkbox"/> Reduction by 50% for filing by Small Entity				\$0.00
		<input type="checkbox"/> Recordation of Assignment			+ \$40 =	\$0.00
		TOTAL				\$0.00

- ☐ A check in the amount of \$0.00 is attached.
- ☐ Credit card payment form is attached to cover the fees in the amount of \$0.00
- ☒ Please charge any additional Fees for the papers being filed herewith and for which no check or credit card payment is enclosed herewith, or credit any overpayment to deposit Account No. 15-0030. A duplicate copy of this sheet is enclosed.
- ☒ If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. §1.136, and any additional fees required under 37 C.F.R. §1.136 for any necessary extension of time may be charged to Deposit Account No. 15-0030. A duplicate copy of this sheet is enclosed.

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.

Gregory J. Maier  
Registration No. 25,599

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(OSMMN 05/03)

Robert T. Pous  
Registration No. 29,099

DOCKET NO: 213954US2



COPY

\*RESPONSE UNDER 37 CFR 1.101  
EXPEDITED PROCEDURE EXAMINING  
GROUP 1773

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF

BERNARD DIENY

SERIAL NO: 09/961,255

FILED: SEPTEMBER 25, 2001

FOR: SPIN VALVE DEVICE WITH SPIN-  
DEPENDENT, SPECULAR ELECTRONIC  
REFLECTION

:

: EXAMINER: UHLIR, N.

:

: GROUP ART UNIT: 1773

:

AMENDMENT

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

SIR:

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JUL 02 2004

TC 1700

In response to the Official Action mailed July 11, 2003, please amend this application  
as follows:

**Amendments to the Claims** are reflected in the listing of claims which begins on  
page 2 of this paper.

**Remarks/Arguments** begin on page 5 of this paper.

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A spin valve device comprising:

at least one stack of layers including an electrically conductive, nonmagnetic layer placed between first and second magnetic layers having a magnetization with a certain direction,

wherein at least one of said first and second magnetic layers ~~has directly at an interface with the nonmagnetic layer,~~ is in direct contact with the electrically conductive, nonmagnetic layer, and has at said contact, a specular reflection for conduction electrons dependent on an orientation of the spin of the conduction electrons relative to a magnetization direction in the first and second magnetic layers.

Claim 2 (Previously Presented): The device according to claim 1, wherein the magnetic layers having the specular reflection include a material selected from the group consisting of 1) ferromagnetic oxides based on at least one of iron, nickel, cobalt and chrome, and 2) ferromagnetic nitrides based on at least one of iron, nickel and cobalt.

Claim 3 (Previously Presented): The device according to claim 1, wherein the electrically conductive, nonmagnetic layer includes a material selected from the group consisting of copper, silver and gold.

Claim 4 (Previously Presented): The device according to claim 3, wherein the electrically conductive, nonmagnetic layer has a thickness less than approximately 10 nm.

Claim 5 (Previously Presented): The device according to claim 1, further comprising an anti-ferromagnetic layer adjacent to at least one of said first and second magnetic layers.

Claim 6 (Previously Presented): The device according to claim 1, wherein the at least one stack is deposited on a substrate.

Claim 7 (Previously Presented): The device according to claim 1, wherein the at least one stack is covered by a protective layer.

Claim 8 (Previously Presented): The device according to claim 1, wherein both of the first and second magnetic layers have said electron specular reflection.

Claim 9 (Previously Presented): The device according to claim 1, wherein the first magnetic layer has an electron specular reflection, the second magnetic layer does not have said specular reflection, but has a diffusion of the conduction electrons dependent on the orientation of the spin of the conduction electrons relative to the magnetization direction in said second magnetic layer.

Claim 10 (Previously Presented): The device according to claim 9, wherein the second magnetic layer having the diffusion of the conduction electrons includes a material selected from the group consisting of transition metals, and alloys based on at least one of nickel, iron and cobalt.

Claim 11 (Previously Presented): The device according to claim 10, further comprising a ferromagnetic layer adjacent to the second magnetic layer.

Claim 12 (Previously Presented): The device according to claim 1, wherein said at least one stack of layers includes a first stack of layers having the first electrically conductive, nonmagnetic layer placed between the first and second magnetic layers and a second stack of layers having a second electrically conductive, nonmagnetic layer placed between the second magnetic layer and a third magnetic layer, said second magnetic layer having a diffusion of the conduction electrons dependent on the orientation of the spin of the conduction electrons, the first magnetic layer of the first stack and the third magnetic layer of the second stack having in each case a specular reflection of the conduction electrons dependent on the orientation of said conduction electrons.

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-12 are pending in the present application with Claim 1 having been amended by the present amendment.

In the outstanding Office Action, Claims 1, 3-6 and 9-11 were rejected under 35 U.S.C. § 102(b) as anticipated by Swagten et al.; and Claims 1-3, 5, 6 and 8 were rejected under 35 U.S.C. § 103(a) as unpatentable over Singleton et al.

Applicant thanks the Examiner for the courtesy of an interview extended to Applicant's representative on September 5, 2003. During the interview, the differences between the present invention and the applied art were discussed. No agreement was reached pending the Examiner's further review when a response is filed. Arguments presented during the interview are reiterated below.

In item 34 at page 9 of the outstanding Office Action (i.e., the Examiner's Note), the Examiner indicates if the Applicant wants to require magnetic layer on a substrate such that no other layers can be present between the substrate and the magnetic layer, suitable language would be "a magnetic layer that is formed directly in contact with the surface of a substrate." In light of this indication, Claim 1 has been amended to recite that at least one of the first and second magnetic layers is in direct contact with the electrically conductive, nonmagnetic layer, and has at said contact, a specular reflection for conduction electrons dependent on an orientation of the spin of the conduction electrons relative to a magnetization direction in the first and second magnetic layers.

In a non-limiting example, Figure 2 illustrates at least one of the first and second magnetic layers (R, R') is in direct contact with the electrically conductive, nonmagnetic layer NM and has at the contact, a specular reflection for conduction electrons dependent on



an orientation of the spin of the conduction electrons relative to a magnetization direction in the first and second magnetic layers.

As noted in the previous amendment filed May 2, 2003, Swagten et al. disclose a spin valve device between two insulating layers, e.g., NiO layers (see Figure 1). The specular reflection appears between the lower NiO layer and the lower magnetic layer. The upper NiO layer does not generate specular reflection for technical reasons explained at the end of Swagten et al. That is, the specular reflection at the interface with the nonmagnetic layer is not generated by the magnetic layers of the spin valve, but rather the specular reflection at the interface with the nonmagnetic layers is generated by the lower NiO layer at the interface with the nonmagnetic layer.

Further, Singleton et al. teach specular scattering layers 101, 105 which are not in direct contact with a nonmagnetic layer.

Accordingly, it is respectfully submitted independent Claim 1 and each of the claims depending therefrom are allowable and the rejections noted in the outstanding Office Action have been overcome.

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.



22850

Tel: (703) 413-3000  
Fax: (703) 413 -2220

I:\ATTY\ADAB\213954US-AM.DOC

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Robert T. Pous  
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